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Chris Haslego
President
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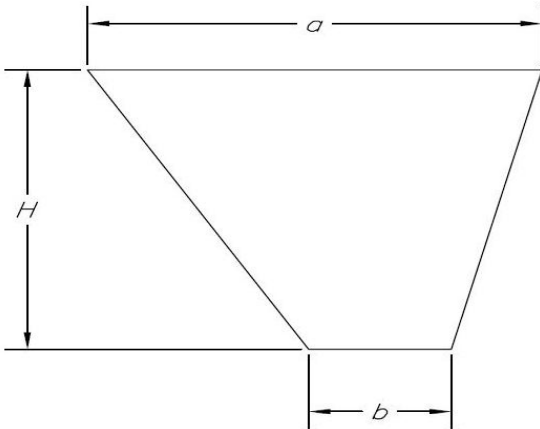
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*Content Based
Chemical Engineering*

MAP/MAV - Trapezoidal Plate, full edge support

SERVICE : _____

<p style="text-align: center;">----- Plate -----</p> <p>Long Parallel Side : _____ in. (a)</p> <p>Short Parallel Side : _____ in. (b)</p> <p>Distance Between Parallel Sides : _____ in. (H)</p> <p style="padding-left: 20px;">$a - \left(\frac{a - b}{3}\right)$: _____ in. (L)</p> <p>Plate Thickness : _____ in.</p> <p>Corrosion Allowance : _____ in.</p> <p>Actual Thickness : _____ in. (t)</p> <p>Allowable Stress : _____ psi (S)</p>	<p style="text-align: center;">----- Liquid Load -----</p> <p>Height : _____ in.</p> <p>Specific Gravity : _____</p> <p>P(liquid) : _____ psi</p>
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----- **MAP Calculation** -----

$$\text{MAP} := 3.56S \cdot t^2 \cdot \left(\frac{L^2 + H^2}{L^2 \cdot H^2} \right) - P(\text{liquid}) = \quad \text{psi}$$

----- **MAV Calculation** -----

----- **Top Plate** -----

Top Area, A = _____ sq. in.

Weight, W = _____

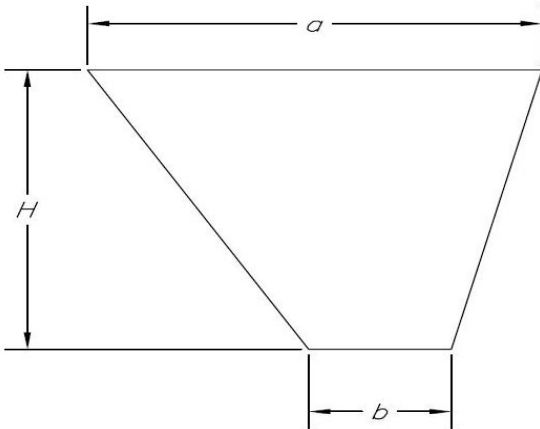
W/A = _____

$$\text{MAV} := 3.56S \cdot t^2 \cdot \left(\frac{L^2 + H^2}{L^2 \cdot H^2} \right) - \frac{W}{A} = \quad \text{psi}$$

MAP/MAV - Trapezoidal Plate, full edge support

SERVICE :

<p style="text-align: center;">Plate</p> <p>Long Parallel Side : mm (a)</p> <p>Short Parallel Side : mm (b)</p> <p>Distance Between Parallel Sides : mm (H)</p> <p>$a - \left(\frac{a - b}{3}\right)$: mm (L)</p> <p>Plate Thickness : mm</p> <p>Corrosion Allowance : mm</p> <p>Actual Thickness : mm (t)</p> <p>Allowable Stress : kPa (S)</p>	<p style="text-align: center;">Liquid Load</p> <p>Height : mm</p> <p>Specific Gravity : </p> <p>P(liquid) : kPa</p>
---	---



----- **MAP Calculation** -----

$$MAP := 3.56S \cdot t^2 \cdot \left(\frac{L^2 + H^2}{L^2 \cdot H^2} \right) - P(\text{liquid}) = \text{ kPa}$$

----- **MAV Calculation** -----

Top Plate

Top Area, A = sq. mm

Weight, W =

W/A =

$$MAV := 3.56S \cdot t^2 \cdot \left(\frac{L^2 + H^2}{L^2 \cdot H^2} \right) - \frac{W}{A} = \text{ kPa}$$

MAP/MAV - Trapezoidal Plate, full edge support

BASIS : This program is for internal and external pressure on a Trapezoidal Plate. Options allow calculation for the top, side and bottom plates of a vessel. The MAV calculation subtracts the dead load of the plate (W/A) from the top segment.

NOTE : Always begin a new case by retrieving the original file. Direct entry of data in cells that originally contain table lookups could cause functions to be lost and/or incorrect calculations. Cells that require data entry are colored **RED**; calculated values are black.

REFERENCES :

- 1) *A method for designing rectangular storage tanks.* - Kanti K. Mahajan
Chemical Engineering - March 28, 1977
- 2) *Pressure Vessel Handbook - 11th Edition*
- 3) *Manual of Steel Construction - Allowable Stress Design - A.I.S.C. 9th Edition*

◇-◇-◇-◇-◇ ProcSafety May 2011, by Mark Roote ◇-◇-◇-◇-◇

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